

APPLICATION FOR UNITED STATES PATENT

Inventor(s): Juliusz Połczyński

Invention: SINGLE USE COMBINATION FOR THE HYGIENE  
OF THE MOUTH CAVITY

Attorney Docket Number: PSP201

Horst M. Kasper, attorney  
13 Forest Drive, Warren, N.J. 07059  
(908)757-2839; Reg.No. 28559  
Docket No.: PSP201

## SPECIFICATION

Single use combination for the hygiene of the mouth cavity

### BACKGROUND OF THE INVENTION

#### 1. Field of the Invention

The present Invention relates to a single use tooth brush for maintaining the hygiene of the mouth.

#### 2. Brief Description of the Background of the invention Including Prior Art

A solution is known containing a packaging, wherein travel organizers contain means for tooth cleaning and a known closed tooth brush in a case having the shape of a cuboidal case.

## SUMMARY OF THE INVENTION

### 1. Purposes of the Invention

It is an object of the present Invention to furnish or technological production of a combination for the hygiene of the mouth.

These and other objects and advantages of the present invention will become evident from the description which follows.

### 2. Brief Description of the Invention

The present invention provides a toothbrush comprising a handle, a block head attached to the handle, a brush attached to the block head, and a case attachable to the block head and sealingly enclosing the brush.

Toothpaste is disposed at a bottom of the case. A hinge connects an outer end of the block head to a narrow rim of the case. A channel forms the handle. Braces are disposed inside the channel and disposed perpendicular to a longitudinal direction of the channel for increasing the stiffness of the channel. A rib connects the handle to the block head, wherein the rib extends

substantially in a plane spanned by a longitudinal direction of the channel and a direction perpendicular to a floor of the channel and attached to the bottom of the channel and to a back of the block head.

The width of the rib decreases from the end on the side of the channel to the end on the side of the block head. Side walls of the channel are sloped downward beginning in an area of a rib and ending near an inner end of the block head. A second rib can be disposed neighboring to the first rib, wherein a distance between the first rib and the second rib decreases from a value of from about 0.3 to 0.7 of the inner width of the channel in the area of the channel to a value of less than 0.1 of the inner width of the channel. A plate can be disposed at and attached to the block head, wherein bristles of the brush protrude from the plate.

The novel features which are considered as characteristic for the invention are set forth in the appended claims. The invention itself, however, both as to its construction and its method of operation, together with additional objects and advantages thereof, will be best understood

from the following description of specific embodiments when read in connection with the accompanying drawing.

## BRIEF DESCRIPTION OF THE DRAWING

In the accompanying drawing, in which are shown several of the various possible embodiments of the present invention:

Figure 1 shows a perspective view from a side of the toothbrush of the present Invention,

figure 2 shows a perspective view from the bristles side of the toothbrush of the present Invention,

figure 3 shows a side elevational view of the back side of the toothbrush of the present Invention,

figure 4 shows a side elevational view of the toothbrush with an open case,

figure 5 shows a side elevational view of the toothbrush with a closed case,

figure 6 shows a sectional view of the toothbrush of the present Invention along section line A - A of figure 3,

figure 7 shows a perspective view from a side of a second embodiment of the toothbrush of the present Invention,

figure 8 shows a top planar view of the second embodiment of the toothbrush with a closed case,

figure 9 shows an in part sectional view of the second embodiment of the toothbrush along section line A – A of Figure 8,

figure 10 shows perspective side view of another embodiment of a toothbrush fitted to accept a cover for the bristles,

figure 11 shows perspective side and in part sectional view of the another embodiment of the cover.

## DESCRIPTION OF INVENTION AND PREFERRED EMBODIMENT

The toothbrush according to figure 1 shows a handle 1 essentially formed as a channel 10 on the side relative remote to the bristles 2. The handle 1 transitions with a down slope 6 of the channel walls toward the block head 7. The down slope reaches an end in the area of the block head, which is still free from bristles 2. A rib 8 connects the rearside of the block head 7 to the inside floor of the channel 10 in the area of the down slope 6.

The length of the rib 8 is from about two to three times the longitudinal extension of the area of the block head 7 assumed by the bristles 2. The side of the rib 8 disposed remote to the bristles 2 slopes from the area of the channel 10 down to the end of the rib 8 in the area of the block head 7. The rib 8 is attached to the floor of the channel 10 in the middle and to the middle of the rearside of the block head 7. The rib 8 can be formed as a dual rib 8 as shown in figure 1 for reinforcement purposes. The straight sections of the dual rib 8 can be joined to a single end in the area of the block head 8. The straight sections of the dual rib 8 can be joined by a rounded section 16 connecting the distance between the straight sections of the dual rib 8, wherein the distance between the straight sections of the dual rib 8 increases from zero at the end of the block head 7 to from about 0.1 to 0.3 times the open width of the channel 10 present at the end of the dual rib 8 in the area of the channel 10. The dual rib 8 is preferably disposed centered in the channel 10.

The length of the bristles 2 can be from a about 0.2 to 0.5 times the longitudinal extension of the rows of bristles and is preferably from about 0.25 to 0.4 times the longitudinal extension of the rows of bristles. The

depth of the channel 10 can be from about 0.5 to 0.8 times the length of the bristles 2.

The channel 10 is closed at its end remote to the bristles with an end section 12. A case 3 is attached at the end of the block head 7 disposed remote relative to the handle 1. A hinge connection is provided between the longitudinal end of the block head 7 and a longitudinal end of the case 3. The case 3 exhibits the shape of a hollow trough adapted to fix over the bristles and to rest at the block head 7. The bottom of the case 3 is filled with toothpaste 4. The depth of the trough can be from about 1.4 to 3 times the length of the bristles 2 and is preferably from about 1.6 to 2.5 times the length of the bristles 2. The longitudinal extension of the trough can be from about 1.2 to 2 times the depth of the trough and is preferably from about 1.4 to 1.7 times the depth of the trough. The edges of the trough can be rounded. The trough is furnished with a rim 12 adapted to engage the block head 7 and to lock the case 3 to the block head 7. The attachment of the case 3 to the block head 7 provided by a hinge between the block head 7 and the rim 12. The attachment of the case 3 to the block head 7 furnishes an hermetic seal. Prior to use of the toothbrush the case 3 can be opened from



the block head 7 and can be separated by sharing of from the block head 7 in the area of the hinge 14.

As an alternative to the hinge connection 14 between block head 7 and case 3, it is also possible to provide the trough-shaped case 3 as a separate part, wherein the case 3 becomes attached with locking snap-in connections disposed along the longitudinal sides of the case 3 and of the block head 7 or disposed along the short cross sides of the case 3 and of the block head 7. The snap-in connections are preferably constructed such that a manual pressure against the relevant longitudinal sides or cross sides of the case 3 will disengage the snap-in lock and release the case 3 to either swing out or to separate completely from the block head 7.

The snap in connection can be furnished by a ledge 13 projecting from two opposite narrow sides of plate 13 in longitudinal direction. The narrow sides can be the longitudinal narrow sides or the cross narrow sides. The cover 3 according to Fig. 11 has recesses 24 in longitudinal direction on the inside near the edge matching the ledges 13 and for engaging the ledges 13. Alternatively, the cover 3 could be furnished with a ledge and the plate 16

with a corresponding recess along the longitudinal edge or along the cross edge of the plate 16. The cover 3 can then be separated from the plate 16 by tearing the cover from the plate or by pressing against the outside of the cover 3 and thereby releasing the snap in connection, wherein the ledge 13 slips out of recess 24 upon pressing against the cover 3. The ledges 13 could also be substituted by a subdivision of the ledge made up of strips or teeth.

The embodiment of Figs. 10 and 11 shows that the edge of the cover 3 surrounds the plate 16. Alternatively, the block head 7 could be furnished with a collar surrounding the bristles 2 such that the lower edge of the cover 3 rests with the outer side at the inner side of the collar. In addition, the lower edge of the cover 3 can be furnished on its outer side with a ledge or with a recess. The inner side of the collar can be furnished correspondingly and matchingly with a recess or, respectively, with a ledge for engaging the corresponding part of the outer side of the lower edge of the cover. This embodiment will require only a small pressing force for disengaging and removing the cover 3 from the block head 7.

The rounding of the handle 1 can be recognized in figure 2. Figure 2 shows an embodiment where the case 3 is adhesively attached the block head 7 prior to use of the toothbrush. Figure 2 shows further that the rows of bristles 2 are disposed asymmetrically relative to the length of the block head. Preferably the position of the first bristles from the end of the block head 7 is located at the distance of 0.5 to 2 times the distance of the location of the neighboring bristles from the side of the block head 7. The distance of the bristles 2 from the end of the block head 7 toward the handle 1 as shown in figure 2 can be from about the 0.5 to 1 times the width of the block head 7.

Figure 3 is shows in dashed -- lines the convergence of the dual rib 8 in the direction toward the bristles 2. Figure 3 also indicates the position of the block head 7 relative to the handle 1.

Figure 4 shows a presence of an additional plate 16 disposed on the block head 7, from which plate the bristles 2 emanate. The thickness of the plate 16 can be from about 0.5 to 2 times the thickness of the block head 7.

The case 3 is disposed in the closed position according to figure 5. The case 3 rests at the block head 7 and surrounds the plate 16.

Figure 6 shows how the edges of the case 3 are engage at the block head 7 and surround the plate 16. According to figure 6 to block head 7 and the plate 16 are made as a single piece of plastic.

Figure 7 shows a second embodiment of the toothbrush of the present Invention. The embodiment of figure 7 shows in addition braces 18 disposed in the channel 10 for reinforcement. The braces 18 are attached with their two ends to the two side walls of the channel 10. There can be from about 3 to 20 braces 18 and preferably from about 4 to 10 braces 18. The braces 18 can be flush with the top of the channel 10 or can be recessed preferably by an amount of 0.01 to 0.2 of the depth of the channel 10. Preferably the braces 18 are uniformly spaced in the channel 10.

Fig. 8 shows a construction of the toothbrush with a single rib 8. The rib 8 is continued in the middle of the channel 10 in the area of the braces 18

forming a divider 20 and thereby subdividing the channel 10 in the middle in a longitudinal direction of the channel 10.

The position of the braces 18 in the handle 1 can be gathered in figure 8. The divider 20 is indicated with dashed lines in figure 8.

It can be recognized from figure 9 that the reinforcement rib 8 reaches up to the first brace 18 of the channel 10. Furthermore figure 9 shows that the braces 18 reach to the bottom of the channel 10.

The present Invention relates to a single use combination for the hygiene of the mouth cavity.

The essence of the solution according to the present Invention resides in that a part of the uniform material is made in a three-dimensional composition, wherein individual fragments are separated and stand apart in their shape as functional elements of a handle, of a brush and of a case. According to another feature of the Invention the case is filled with an agent for cleaning teeth. According to yet another feature of the Invention the case

is a part of a three-dimensional composition of a one kind material, and is swinging with respect to the parts of the composition performing the functions of the brush. According to the next feature of the Invention the case, which is a part of the three-dimensional composition and a part of the single kind of material according to the solution and assumes the position of that one fragment, which fragment contains a part performing the function of the brush.

An advantageous result of the application of the Invention is the compact construction, which compact construction allows the making of stable parts of the combination for hygiene by way of a single operation.

The subject matter of the Invention is shown in an axonometric view in the accompanying drawing. The combination for hygiene according to the Invention contains parts of a uniform material, establishes a three-dimensional composition, wherein individual fragments separate in their form the functional elements of handle 1, brush 2, case 3, as well as agent for cleaning the teeth 4 completing a fragment performing the function of the case 3. Fulfilling the function of the handle 1, a part of the three-

dimensional composition out of a portion of uniform material has the shape of a flat bar with long sides bent toward the bottom as well as connecting the parts at the short side. A part of the three-dimensional composition of a portion of the uniform material has the shape of a flat bar performing the function of the brush 2, wherein rows of spikes or thorns protrude from the surface of the bar. A part of the three-dimensional composition made of a part of the uniform material has the form of an open box performing the function of the case 3. Swinging with respect to the fragment of the three-dimensional composition, a part of the portion of uniform material performing the function of the case 3 after assembly, this fragment surrounds that fragment which contains the parts performing the function of the brush 2.

The case 3 or capsule which is connected to the tooth brush with the aid of a hinge with a goal that the tooth brush performs the constructive role of a single time use, only to the point in time of the use of the tooth brush. The capsule has to be torn off prior to use. The tooth brush can weigh from about 4 to 8 grams such as for example 5.6 grams. The toothpaste inside the capsule can weigh for example 2 to 4 grams such as three grams. The

overall weight of the tooth brush can be from about 6 to 12 grams such as 8.5 grams. The length of the tooth brush can be from about 10 to 18 cm such as 13 cm.

The combination for hygiene is constructed thinking of situations, where the user does not have is the tooth brush with him or with her, for example during a visit to the doctor, to the dentist, in hotels, on airline, in gas stations, in sleeping coaches and the like. The tooth brush comprises a capsule above the brushes, which is hermetically sealed , wherein a portion of toothpaste is located above the capsule. The capsule has to be opened, torn apart and the tooth brush is ready for use. The combination for hygiene is produced by the injection molding method into forms overall as a single piece in integral parts containing the handle 1, the brush 2, as well as the capsule 3 connected with a swinging hinge. There was success to obtain two opposite things: with a uniform raw material was produced a stiff handle and a soft hair of a brush. The handle 1 is formed in the shape of the channel for reinforcement with a grating or truss stiffening the construction. Further down the handle 1 goes over into a flat form, wherein brushes protrude from the flat form. The production method of injection molding



allows to produce the combination for hygiene cheaper than all tooth brushes, even though toothpaste has been added as an included feature.

The length of the handle can be from about 8 to 15 cm such as for example 10 cm. The thickness of the handle can be from about 0.6 to 1.5 centimeters and for example be 0.9 centimeters. The thickness of the capsule can be from about 1 to 2 centimeters and for example can be 1.4 centimeters.

The toothbrush of the present invention comprises a block handle and the block head. Bristles can be attached to tuft holes disposed in the flat block head.

It will be understood that each of the elements described above, or two or more together, may also find a useful application in other types of toothbrush configurations and oral hygiene procedures differing from the types described above.

While the invention has been illustrated and described as embodied in the context of a combination for oral hygiene, it is not intended to be limited to the details shown, since various modifications and structural changes may be made without departing in any way from the spirit of the present invention.

Without further analysis, the foregoing will so fully reveal the gist of the present invention that others can, by applying current knowledge, readily adapt it for various applications without omitting features that, from the standpoint of prior art, fairly constitute essential characteristics of the generic or specific aspects of this invention.

What is claimed as new and desired to be protected by Letters Patent is set forth in the appended claims.